

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. **R5-2008-XXXX**  
FOR  
CITY OF FRESNO, UNITED STATES ARMY CORPS OF ENGINEERS,  
UNITED STATES NATIONAL GUARD, AND THE BOEING COMPANY  
OLD HAMMER FIELD  
FRESNO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction, treatment, and injection system. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Water Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

**TREATMENT SYSTEM MONITORING**

Monitoring of the groundwater extraction and treatment system shall consist of grab samples collected from the influent and effluent sampling ports of the system, as well as a grab sample collected from the sampling port between the two granular activated carbon (GAC) vessels. The treatment system monitoring shall follow the schedule presented in Table 1 below and the samples analyzed by the methods in Table 2 below.

**GROUNDWATER MONITORING**

The location of the Toe of the Plume groundwater treatment and extraction area is shown on Attachment A. As shown on Attachment B, there are 8 monitoring wells, 1 piezometer, 1 (possibly 2) extraction wells, and 2 (possibly 3) injection wells associated with this site. The monitoring wells, piezometers and extraction wells that require sampling include: HFEW-1; HFEW-2 (if installed); HFMW-57C, D, E, & F; HFMW-55D, E, & F; HFMW-30C, D, & E; HFPZ-06; HFMW-49C & D; HFMW-54C, D, E & F; HFMW-29C; HFMW-19C, and HFMW-53C, D, E & F. The groundwater monitoring program for these wells and any wells installed subsequent to the issuance of this MRP shall follow the schedule below. The volume of extracted and injected groundwater also shall be provided in quarterly monitoring reports. Sample collection and analysis shall follow standard USEPA protocol. Groundwater levels in each of these wells, including injection wells HFIW-1 and HFIW-2 (and HFIW-3, if installed), will also be measured, recorded, and reported as part of this MRP.

The monitoring wells, extraction wells, and piezometers shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

MONITORING AND REPORTING PROGRAM

2

ORDER NO. R5-2008-XXXX

CITY OF FRESNO, UNITED STATES ARMY CORPS OF ENGINEERS,

UNITED STATES NATIONAL GUARD, AND THE BOEING COMPANY

OLD HAMMER FIELD

FRESNO COUNTY

**Table 1: SAMPLING REQUENCY AND CONSTITUENT SUITE<sup>1</sup>**

<b>Well/ Treatment System Port<sup>1</sup></b>	<b>Weekly, First Month</b>	<b>Monthly, Second and Third Month</b>	<b>Quarterly, After Three Months<sup>3</sup></b>	<b>Monitoring Objective</b>
HFIW-1	Suite A	Suite A	Suite A	Groundwater Level Monitoring
HFIW-2	Suite A	Suite A	Suite A	Groundwater Level Monitoring
HFIW-3 (if installed)	Suite A	Suite A	Suite A	Groundwater Level Monitoring
Influent Port	Suite B <sup>2</sup> , Suite C	Suite B, Suite C	Suite B, Suite C	Treatment System Evaluation
Effluent Port	Suite B <sup>2</sup> , Suite C	Suite B, Suite C	Suite B, Suite C	Treatment System Evaluation
Between GAC Vessels	Suite B <sup>2</sup> , Suite C	Suite B, Suite C	Suite B, Suite C	Treatment System Evaluation
HFEW-1	Suite A, Suite B <sup>2</sup> , Suite C	Suite A, Suite B, Suite C	Suite A, Suite B, Suite C	Extraction Well Monitoring
HFEW-2 (if installed)	Suite A, Suite B <sup>2</sup> , Suite C	Suite A, Suite B, Suite C	Suite A, Suite B, Suite C	Extraction Well Monitoring
HFMW-57C, D, E, & F	Suite A, Suite B <sup>2</sup> , Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Downgradient Compliance Well
HFMW-55D, E, & F	Suite A, Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Compliance Well
HFMW-30C, D, & E	Suite A, Suite B <sup>2</sup> , Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Downgradient Compliance Well
HFPZ-06	Suite A, Suite B <sup>2</sup> , Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Compliance Well
HFMW-49C, D, & E	Suite A, Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Compliance Well
HFMW-29C	Suite A, Suite B <sup>2</sup> , Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Compliance Well
HFMW-54C, D, E & F	Suite A, Suite B <sup>2</sup> , Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Upgradient Plume Monitoring
HFMW-19C	Suite A, Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Upgradient Plume Monitoring
HFMW-53C, D, E & F	Suite A, Suite C <sup>2</sup>	Suite A	Suite A, Suite C	Upgradient Plume Monitoring

<sup>1</sup> Well numbers as shown on Attachment B. Note that some wells, once constructed, may be given an alternate designation than that shown on Attachment B to go with the overall site monitor well numbering scheme.

<sup>2</sup> Analysis to be conducted during the first week of sampling only.

<sup>3</sup> If an exceedence occurs as defined in Section B.2. Discharge Specifications of Waste Discharge Requirements Order No. R5-2008-XXXX, additional sampling shall be conducted on a weekly frequency for a minimum of four weeks, or, thereafter, until the exceedence has been corrected.

ORDER NO. R5-2008-XXXX

CITY OF FRESNO, UNITED STATES ARMY CORPS OF ENGINEERS,

UNITED STATES NATIONAL GUARD, AND THE BOEING COMPANY

OLD HAMMER FIELD

FRESNO COUNTY

**Table 2: ANALYTICAL METHODS**

<b>Constituent</b>	<b>Method<sup>1</sup></b>	<b>Maximum Practical Quantitation Limit<sup>2</sup></b>
<b>Suite A</b>		
Groundwater Level Measurements	Nearest 0.01 ft	NA
<b>Suite B</b>		
Calcium	6010B	0.010 mg/L
Iron	6010B	0.010 mg/L
Magnesium	6010B	0.010 mg/L
Manganese	6010B	0.015 mg/L
Potassium	6010B	5.0 mg/l
Sodium	6010B	0.010 mg/L
Chloride	6010B	1.0 mg/L
Nitrate (as N)	300.0A	0.1 mg/L
Total Dissolved Solids	160.1	10 mg/L
<b>Suite C</b>		
Volatile Organic Compounds	8260B	Various µg/L

<sup>1</sup> Or an equivalent USEPA Method that achieves the maximum Practical Quantitation Limit.

<sup>2</sup> All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported, and reported as an estimated value.

### **Extraction/Injection Monitoring**

The Discharger shall monitor and record the average daily extraction rates of groundwater from each extraction well, and the average daily injection rate of treated groundwater into each of the injection wells. The extraction/injection rates for each extraction and injection well should be reported in gallons per minute. In addition, cumulative gallons of groundwater processed through the treatment system should also be reported.

### **Establishment of Baseline Concentration Values**

The Discharger shall develop baseline values for concentrations of calcium, iron, magnesium, manganese, potassium, sodium, chloride, nitrate, and total dissolved solids (Suite B of Table 2 above). Analytical results from samples collected during the first week of the treatment system startup, as indicated in Table 1 above, are to be used to determine baseline concentrations.

### **REPORTING**

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Regional Water Board within 48 hours of any unscheduled shutdown of the groundwater extraction and treatment system. The results of any

MONITORING AND REPORTING PROGRAM

4

ORDER NO. R5-2008-XXXX

CITY OF FRESNO, UNITED STATES ARMY CORPS OF ENGINEERS,  
UNITED STATES NATIONAL GUARD, AND THE BOEING COMPANY  
OLD HAMMER FIELD  
FRESNO COUNTY

monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Regional Water Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.

The Discharger shall submit quarterly electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end of each calendar quarter by **1 February, 1 May, 1 August, and 1 November** until such time as the Executive Officer determines that the reports are no longer necessary.

Quarterly reports shall be submitted to the Regional Board by the **1st day of the second month following the end of each calendar quarter (i.e., by 1 February, 1 May, 1 August, and 1 November)**. Each quarterly report shall include the following minimum information:

- (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume is captured by the treatment system;
- (b) field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.;
- (c) groundwater contour maps for all groundwater zones, if applicable, and showing extraction well capture zones and injection well mounding;
- (d) isocontour pollutant concentration maps for all groundwater zones, if applicable;
- (e) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
- (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
- (g) cumulative data tables containing the water quality analytical results and depth to groundwater;
- (h) a copy of the laboratory analytical data report;

MONITORING AND REPORTING PROGRAM

5

ORDER NO. R5-2008-XXXX

CITY OF FRESNO, UNITED STATES ARMY CORPS OF ENGINEERS,

UNITED STATES NATIONAL GUARD, AND THE BOEING COMPANY

OLD HAMMER FIELD

FRESNO COUNTY

- (i) if applicable, the status of ongoing remediation, including cumulative information on the mass of pollutant removed from the subsurface, treatment system operating time, the effectiveness of the treatment system, and any field notes pertaining to the operation and maintenance of the system; and
- (j) if applicable, the reasons for and duration of all interruptions in the operation of the treatment system, and actions planned or taken to correct and prevent interruptions; and
- (k) A log of GAC replacement, if applicable along with transportation date(s) and destination of disposal.

An Annual Report shall be submitted to the Regional Water Board by **1 February** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the fourth quarter monitoring report. The Annual Report shall contain the following minimum information:

- (a) both tabular and graphical summaries of all data obtained during the year;
- (b) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year;
- (c) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
- (d) an analysis of whether the pollutant plume is being captured by an extraction system or is continuing to spread;
- (e) a description of all treatment system activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve the treatment system effectiveness;
- (f) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
- (g) if desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or treatment system modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury

MONITORING AND REPORTING PROGRAM

6

ORDER NO. R5-2008-XXXX

CITY OF FRESNO, UNITED STATES ARMY CORPS OF ENGINEERS,  
UNITED STATES NATIONAL GUARD, AND THE BOEING COMPANY  
OLD HAMMER FIELD  
FRESNO COUNTY

statement by the Discharger, or the Discharger's authorized agent, as described in the  
Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month  
following adoption of this Order.

Ordered by:

\_\_\_\_\_  
PAMELA C. CREEDON Executive Officer

\_\_\_\_\_  
(Date)

Date:GJI